

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Unit 308F – Flares Unit
Alliance Refinery
ConocoPhillips Company
Belle Chasse, Plaquemines Parish, Louisiana
Agency Interest Number: 2418
Activity Number: PER19960014
Draft Permit No. 2779-V0**

I. APPLICANT:

Company:

ConocoPhillips Company
P.O. Box 176, Belle Chasse, LA 70037

Facility:

Alliance Refinery
15551 Hwy 23, Belle Chasse, Plaquemines Parish, Louisiana
Approximate UTM coordinates are 211.51 kilometers East and 3,286.84 kilometers North, Zone 16

II. FACILITY AND CURRENT PERMIT STATUS:

ConocoPhillips Company owns and operates the Alliance Refinery, a petroleum refinery located in Belle Chasse, Louisiana. Gulf Oil Company built the refinery in 1970. BP Oil Company owned Alliance Refinery from 1985 until Tosco Corporation (Tosco) purchased it in September 2000. Tosco later became a wholly owned subsidiary of Phillips Petroleum Company on September 17, 2001. On August 30, 2002, Phillips Petroleum Company, including its subsidiary Tosco Corporation, completed a merger with Conoco Inc. to form ConocoPhillips Company. On January 1, 2003, the owner and operator of the Alliance Refinery formally changed from Tosco to ConocoPhillips Company.

Alliance Refinery produces a wide range of petroleum products from crude oil, such as motor gasoline, jet fuel, diesel fuel, LPG, carbon black feedstock, propane, and coke. It also produces by-product elemental sulfur and petrochemicals such as benzene, toluene, and xylene. The plant is covered by Standard Industrial Classification (SIC) 2911.

The refinery has two above ground flares, designated as low and high pressure systems. Various process streams are sent to these flares for destruction. The purpose of the flare system is to provide a means to safely collect gases and/or liquids released from process

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units. The flares are also routinely used for the purging and depressurizing of equipment to prepare them for mechanical work.

The flares control process vent streams to various National Emission Standards for Hazardous Air Pollutants (NESHAP) control requirements. The Low Pressure Flare, Emission Point No. 308F-D-1, is a control device for Group 1 40 CFR 63 Subpart CC vents, Group 1 Hazardous Organic NESHAP (HON) vents, and 40 CFR 63 Subpart UUU Catalytic Reforming Units (CRU) HAP vents. The High Pressure Flare, Emission Point No. 308F-D-2, is a control device for Group 1 40 CFR 63 Subpart CC vents.

In addition, the facility has several state permits that will remain effective until replaced by a Part 70 permit. These include:

Permit Number	Units or Sources	Date Issued
33	Refinery Wide	10/20/70
1607T	Flare Gas Compressor	08/17/81
2163	Benzene Recovery Unit	10/08/92
2180	Source 191-H-3	03/04/93

Several Part 70 and PSD permits addressing portions of the facility have already been issued. These include:

Permit Number	Units or Sources	Unit Name	Date Issued
PSD-LA-75(M-2)	Unit 301	Boilers	10/13/87
PSD-LA-624	Source 301-B-3	Supplemental Boiler	09/16/98
2593-V0	Unit 293	Gulfining Unit	02/08/99
2113-V0	Unit 292	Diesel Hydrotreater Unit	12/07/00
2513-V4	Unit 412	Offsites	12/07/05
2776-V0	Unit 7591	Merox Treater Unit	10/18/02
2511-V2	Unit 891	Delayed Coking Unit	11/16/05
2840-V0	Unit 294	Low Sulfur Gasoline Unit	10/03/03
PSD-LA-696	Unit 294	Low Sulfur Gasoline Unit	10/03/03
2512-V1	Unit 491 & Unit 6191	HF Alkylation & Light Ends Recovery Unit	10/08/03
2778-V0	Unit 303	Utilities	08/16/04
2774-V1	Unit 591/592	Sulfur Recovery Unit	09/21/05
1810-V2	Unit 1291/301	Fluidized Catalytic Cracking Unit/CO Boilers	02/22/05
1870-V0	Unit 308W	Wastewater Treatment Unit	08/23/05
2313-V0	Unit 406	Marine Loading and Transfer Operations	02/09/06

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Finally, several applications for initial Part 70 permits addressing the remaining portions of the facility are still under review by the department. These include:

Units	Unit Name
Unit 291/1391	Naphfining/Catalytic Reforming Unit
Unit 1791/1792	Aromatic Extraction/Thermal Hydrodealkylation Unit
Unit 191/7991	Crude Unit/Saturated Gas Unit
Unit 308F	Flares

III. PROPOSED PERMIT / PROJECT INFORMATION:

Permit Application Submittal Information

BP Oil Company submitted applications and Emission Inventory Questionnaires (EIQ) dated October 7, 1996, requesting Part 70 permits for Unit 308F. ConocoPhillips Company submitted a revised application and Emission Inventory Questionnaire (EIQ) dated November 18, 2005, as well as, additional information dated February 27, 2006, requesting a Part 70 permit.

Project description

ConocoPhillips Company proposes the following changes:

- Update the flare emission calculations for both the Low Pressure, Emission Point No. 308F-D-1, and the High Pressure Flares, Emission Point No. 308F-D-2, using the 2005 flare study data and historical flow measurement data from the last five years.
- Update Fugitive emission calculation using current emission factors and component counts.
- By no later than December 31, 2011, ConocoPhillips shall ensure compliance with the flaring combustion requirements of 40 CFR 60 Subpart J for both the Low Pressure, Emission Point No. 308F-D-1, and the High Pressure Flares, Emission Point No. 308F-D-2, as mandated by the Consent Decree (Civil Action H-05-0258 lodged January 27, 2005).

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Permitted Air Emissions

Estimated emissions in tons per year are as follows:

<u>Pollutant</u>	<u>Before**</u>	<u>After</u>	<u>Change</u>
PM ₁₀	N/A	0.20	+ 0.20
SO ₂	338.00	3190.45	+2852.45
NO _x	237.40	73.19	- 164.21
CO	54.00	386.79	+ 332.79
VOC	22.01	157.50	+ 135.49

** The “Before” total includes emission sources permitted in the State Permit No. 1607 T, issued August 17, 1981, as well as the grandfathered emission source not included in the state permit. For the “Before” Totals, current emission factors were used for the Unit Fugitives for Flares, Emission Point No. 308F-FF, that was not included in any state permits. There are no process modifications or changes in method of operation associated with this permit.

Prevention of Significant Deterioration Applicability

This plant is not being modified; therefore, PSD does not apply.

This application was reviewed for compliance with the Louisiana Preconstruction and Part 70 operating permit program. It was also reviewed for compliance with Louisiana Air Quality Regulations, National Emission Standards for Hazardous Air Pollutants (NESHAP), and New Source Performance Standards (NSPS). Prevention of Significant Deterioration (PSD) does not apply.

MACT requirements

Compliance with the Louisiana Fugitive Emission Consolidation Program, with 40 CFR 63 Subpart H, SOCM I MACT being the most stringent program, is determined as MACT for fugitive emissions. The flares act as control devices for several process vents. The flares are operated in accordance with 40 CFR 60 Subpart A and 40 CFR 63 Subpart A to ensure proper destruction of HAPs and TAPs.

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Air Modeling Analysis

Dispersion Model(s) Used: ISCST3 (Screen by LDEQ)

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
NO _x	Annual	20.56 µg/m ³	100 µg/m ³
SO ₂	3-hour	455.88 µg/m ³	1300 µg/m ³
	24-hour	264.25 µg/m ³	365 µg/m ³
	Annual	25.31 µg/m ³	80 µg/m ³

The dispersion model was run for the Clean Fuels project. The screening model results for SO₂ were added to the Clean Fuels results since the 2005 flare study resulted in a significant increase of SO₂ emission estimates.

Impact on air quality from Unit 308F - Flares will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities

The facility will comply with the applicable requirements of General Condition XVII of the Louisiana Air Emission Permit General Conditions in the Title V Permit. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit. These releases are small and will have an insignificant impact on air quality.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

IV. Permit Shields

A permit shield was not requested.

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V. Periodic Monitoring

Fugitive emissions must be monitored according to the provisions of 40 CFR 63, Subpart H, SOCMHONMACT.

VI. Applicability and Exemptions of Selected Subject Items

Regulatory applicability, standards, monitoring, reporting and recordkeeping requirements are provided in the Facility Specific Requirements Section of the draft permit. The table below summarizes highlights of the regulatory applicability for each emission point.

Source ID No.:	Requirement	Applicability
Facility – Unit 308F	40 CFR 61.340 Subpart FF– National Emission Standard for Benzene Waste Operations.	EXEMPT. Unit has no benzene waste. Refinery has > 10 Mg/yr benzene from waste and must meet control, reporting, and recordkeeping requirements. (See Title V Permit, Unit 308W, Wastewater Treatment Unit.)
308F-D-1 Low Pressure Flare	LAC 33:III.1105.A – Smoke from Flaring Shall Not Exceed 20 Percent Opacity	Emission of smoke from a flare or other similar device used for burning in connection with pressure valve releases for control over process upsets shall be controlled so that the shade or appearance of the emission does not exceed 20 percent opacity for a combined total of six hours in any 10 consecutive days.
308F-D-2 High Pressure Flare	LAC 33:III.1503.C – Emission Standard for Sulfur Dioxide	Unit emits >250 tpy SO ₂ . Discharge gases shall not exceed concentrations of 2,000 ppmv SO ₂ (3-hour average).
	40 CFR 60 Subpart A – New Source Performance Standards (NSPS) General Provisions	Flares to be operated with (a) no visible emissions (except for a total of 5 min. in any consecutive 2 hours), (b) a continuous pilot flame, and (c) the combusted gas having a net heating value of >=300 BTU/scf.
	40 CFR 63 Subpart A – National Emission Standards For Hazardous Air Pollutants For Source Categories (NESHAP)	Flares to be operated with (a) no visible emissions (except for a total of 5 min. in any consecutive 2 hours), (b) a continuous pilot flame, and (c) the combusted gas having a net heating value of >=300 BTU/scf. The Low Pressure Flare is a control device for Group 1 CC vents, Group 1 HON vents, and UUU CRU HAP emissions. The High Pressure Flare is a control device for Group 1 CC vents.

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Source ID No.:	Requirement	Applicability
308F-FF Unit Fugitives for Flares	LAC 33:III.5109.A Comprehensive Toxic Air Pollutant Emission Control Program	Control emissions of toxic air pollutants to a degree that constitutes Maximum Achievable Control Technology (MACT) as approved by DEQ. Compliance with the Louisiana Fugitive Emission Consolidation Program, with 40 CFR 63 Subpart H, SOCMI HON MACT, being the most stringent program, is determined as MACT.

VII. Streamlined Requirements

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Unit 308F – Flares Unit	40 CFR 63, Subpart H, SOCMI HON MACT	≥ 5% organic HAP	40 CFR 63 Subpart H SOCMI HON MACT
	40 CFR 63, Subpart CC NESHAP – Petroleum Refineries	≥ 5% organic HAP	
	LAC 33:III.2121, Louisiana Fugitive Emission Control	≥ 10% VOC	

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VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Black - A black colloidal substance consisting wholly or principally of amorphous carbon and used to make pigments and ink.

Carbon Monoxide (CO) – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Cooling Tower – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

Continuous Emission Monitoring System (CEMS) – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

Cyclone – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

Duct Burner – A device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

Federally Enforceable Specific Condition - A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;

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- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Heat Recovery Steam Generator (HRSG) – A steam generator that recovers exhaust heat from a gas turbine, and provides economizing and steam generation surfaces.

Hydrogen Sulfide (H₂S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants –Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

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Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Selective Catalytic Reduction (SCR) – A noncombustion control technology that destroys NO_x by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO_x into molecular nitrogen and water.

Sulfur Dioxide (SO₂) – An oxide of sulfur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3).

Title V permit – See Part 70 Operating Permit.

“Top Down” approach – An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.

Turbine – A rotary engine in which the kinetic energy of a moving fluid is converted into mechanical energy by causing a bladed rotor to rotate.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.